NOTE ON PROF. HALL'S QUERY IN VOL. VII, NO. FOUR.

BY PROF. ORMOND STONE.

As ∇v does not assume eight values at the surface of an attracting body, Todhunter does not give the explanation mentioned by Prof. Eddy in the last number of this journal. What Todhunter does say is that "∇v is an aggregate of three terms, each of which has two values; so that there are in all eight *combinations*, of which one gives the value of ∇v agreeing with that found for an internal particle, and the other gives the value of ∇v agreeing with that found for an external particle; the other six remain without meaning." In other words, there are only *two* values of ∇v, namely, $-4\pi\rho$ and 0. The reason that the remaining combinations are "without meaning" lies in the fact, as I have before stated, that the second differential coefficients of v with regard to x, y, z are *not independent* of one another.

ANSWER TO QUERY (SEE PAGE 63) BY W. E. HEAL.—There are several methods of elimination between equations described in the query.

The following methods are explained in Salmon's Higher Algebra, third edition:—Elimination by Symmetric Functions, Elimination by Greatest Common Divisor, Euler's method, Sylvester's dialytic method, Bezout's method and Caley's statement of Bezout's method.

SOLUTION OF PROB. 338 (SEE P. 31) BY PROF. ORMOND STONE.—Let α and δ be the heliocentric right ascension and declination of the perihelion of the comet's orbit; the comet will evidently approach a point opposite the perihelion, i. e., a point whose right ascension and declination are $\alpha+180°$ and $-\delta$. To find α and δ, we have

$$\tan(\alpha-\Omega) = \cos i \tan(\pi-\Omega),$$
$$\sin\delta = \sin i \sin(\pi-\Omega),$$

where i is the inclination of the orbit to the equator and $\pi-\Omega$ the distance of the perihelion from the node.

NOTE BY PROF. E. B. SEITZ.—Eq. (4) of Mr. Heal's solution of 334, p. 60, is wrong. From (1) and (2) we see that the tangents of the angles bet. the tang't lines and the axis of x are $-b\cos\theta\div a\sin\theta$ and $-b\cos\varphi\div a\sin\varphi$; hence by the formula for the tangent of the diff of two angles

$$\tan\alpha=\left(\frac{b\cos\varphi}{a\sin\varphi}-\frac{b\cos\theta}{a\sin\theta}\right)\quad\left(1+\frac{b^2\cos\theta\cos\varphi}{a^2\sin\theta\sin\varphi}\right)=\frac{ab(\sin\theta\cos\varphi-\cos\theta\sin\varphi)}{a^2\sin\theta\sin\varphi+b^2\cos\theta\cos\varphi}.$$